



# PROCEEDINGS

of the  
American Society  
of  
Civil Engineers

2 PARTS

PART 2

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No. 1

## Opportunities for a Young Man in Civil Engineering

A 14-year old boy wishes to leave school to take up civil engineering. His father writes to the magazine "Personality" for advice. Replying in the December issue of the magazine, President Stevens makes some cogent observations, reprinted herewith. These contain food for thought for young and old alike.

THERE is no question as to the value of technical training in preparation for an engineering career. It is not merely a knowledge of the fundamentals of engineering that counts, such as the use of instruments, the strength and application of materials, and the designing of many classes of structures. It is the mental training that really counts for something. The years spent in preparation are perhaps the most important in an engineer's professional life. Without the training which a college gives, a young man will find it difficult to rise in the profession.

But how is it some men have done well and made a name for themselves in the profession without the benefit of a technical education? In one hundred per cent. of the cases cited, this statement is not true. Every real engineer, civil or otherwise, must possess in a greater or less degree technical knowledge. Few realize the unremitting study by means of books, publications, and observation which the self-educated engineer must pursue during weary years, to the neglect of his social and general obligations to the world.

A young engineer must not expect to leap into prominence early in his

career, especially by some spectacular performance. Confidence in his ability and character is usually a plant of slow growth and the reward comes accordingly. He should have ambition, but the best ambition is to do well the job in hand, however unimportant it may appear in his eyes, fitting himself to handle the bigger tasks and take the place of the man next above him when opportunity offers. Most of us (I was that way myself) have the belief that as subordinates we are doing all the work while our superior is getting all the credit.

But as we climb in rank we realize that higher rank means vastly increased responsibilities as well as greater financial returns. And the further an engineer advances in his profession the more fully will he realize that his success depends largely on the good work and loyal

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## Help the Certificate Plan

IF you had a chance to help a lot of other men, at little or no cost to yourself, would you do it? If this meant making it easier for many people to attend the 1928 Annual Meeting, so that you could see them and talk to them, and enjoy this yearly renewal of your friendship, could you help doing it?

The Certificate Plan is the key to this problem. Details are given in Part I, and on the official program of the Annual Meeting. It's another chance for "team-work."

## Annual Meeting

EVERY member should mark his calendar for the important dates of Wednesday, Thursday and Friday, January 18, 19 and 20, 1928. Then comes the Annual Meeting.

Even before that date many members of the Society will have been active in getting ready for it. For weeks the Local Committee has been laying its plans. There are final ballots for officers to be counted beforehand. The Board of Direction will meet on the Saturday previous, on membership work, and on Monday and Tuesday for its regular meeting. The Past Officers will hold a social dinner. And, of course, practically the entire staff of the Secretary's office will have been busy for several days trying to anticipate any difficulties or labor connected with the Meeting.

But all these are simply preliminary. The events that most members look forward to and often come great distances to enjoy are comprised within the regular meeting days. There is the Annual Business Meeting, the installation of new officers and honorary members, the award of medals and prizes, the reports of the Committees' work during the past year, the Division Meetings, the engineering exhibits, the inspection trips, and, of course, the social events and ladies' entertainments. All these are detailed in the official program.

Many members know the value of these meetings from experience, and would sacrifice a great deal not to miss one. Others may need a single trial to bring them to the same frame of mind. The variety of interest afforded, the wide attendance of fellow engineers, and the opportunity of a visit, even a short visit, to the metropolis, provides an excuse for

any member, if he needs an excuse, to attend this Meeting.

The business of the Society, in its larger sense, entails a great deal of work in the aggregate. To many members, the Annual Meeting provides the only means of having any share in it. Without exception, the effort to do this is repaid in pleasure and satisfaction to every member.

## Fulton and Napoleon

**I**NNOCENTLY enough, a story regarding John Rennie in the December Proceedings, Part II, referred to a current notion that Napoleon was negligent in failing to utilize the invention of the steamboat as offered by Robert Fulton.

That this impression is erroneous is asserted by William Barclay Parsons, Honorary Member of the Society. Further he quotes no less an authority than his own book "Robert Fulton and the Submarine." From this it appears that what Fulton really offered to Napoleon was not a steamboat, but a hand-propelled submarine—the first submarine, named the "Nautilus."

Well, if it wasn't a steamboat, it was a submarine; and the point is that Napoleon "turned him down." These historic facts, recently brought out, throw interesting light on two great personages of the early Nineteenth Century, and of an ingenious device which had to wait 100 years longer before its full significance was to be determined in those same waters.

## Section Dues Are Not Society Dues

**A** MEMBER writes to ask if he can deduct from his Society dues the amount he pays to his Local Section. The answer is obvious—the two are not the same, or even equivalent. The Local Section is a distinct body and its members enjoy distinct privileges. Its name implies its function; in reality it is largely "local" in its activities.

Similarly its expenses are essentially of a local character over and above those that may be of a general or Society nature. Hence, although the Society co-operates by contribution, this is seldom enough to carry on all the lines of endeavor—consequently the need for local dues as distinct from Society dues. Such extra dues are therefore both necessary and logical.



Facsimile of Hering Medal, established and awarded by Sanitary Engineering Division. First presentation to Harrison P. Eddy, Member, on January 18, 1928



## "Bring the Ladies"

**A**N Annual Meeting of the Society would be a dull enough affair without the presence of the ladies. The practice has been to schedule events to entertain them practically continuously throughout the week.

During certain intervals—the happiest ones of the week—both men and women together enjoy the festivities. But when members are busy at technical meetings, and other sessions far from popular with the "fair sex," independent entertainment is the rule.

At the 1928 Annual Meeting, theater parties on Wednesday afternoon and Thursday evening, a dinner dance on Wednesday evening, auto drives and tea on Thursday afternoon, and an all-day excursion on Friday will certainly appeal to the ladies. It is essential however that those desiring tickets for the Wednesday afternoon or Thursday evening theater performances should send checks to the Secretary's office 10 days in advance, in order that seats may be obtained in advance.

Not so long ago a member never thought of bringing his wife to these meetings. Nowadays, it is more likely that she considers it a prerogative. Certainly she is at the meeting in large representation, and from all appearances, enjoys it just as much as her husband. In fact, some members even say that they are not permitted to stay away.

Whatever the contributing causes, it is certain that no member need stay away because he has to come alone; nor should his wife decline to come because she may not have a good time. There will be plenty of entertainment for all—serious, farcial, amusing, and instructive.

## Theatre Suggestions

### Annual Meeting

WEDNESDAY MATINEE

and

THURSDAY EVENING

January 18 and 19, 1928

#### Serious

*An Enemy of the People*—(Walter Hampden in an Ibsen revival). Hampden Theatre, Broadway and 62nd Street. *Matinee*—Orchestra, \$2.75; Balcony, \$1.65. *Evening*—Orchestra, \$3.85; Balcony, \$2.20.

#### Operettas

*A Connecticut Yankee*—Vanderbilt Theatre, 148 W. 48th Street. *Matinee*—Orchestra, \$3.30; Balcony, \$2.75. *Evening*—Orchestra, \$3.85; Balcony, \$2.20.

#### Musical Comedy

*Happy*—Earl Carroll Theatre, 7th Avenue and 50th Street. *Evening only*. Orchestra, \$3.85; Balcony, \$3.30.

*Good News*—Chanin's Theatre, 46th Street, West of Broadway. *Matinee*—Orchestra, \$3.30; Balcony, \$3.30. *Evening*—Orchestra, \$5.50; Balcony, \$4.40.

*Funny Face*—Alvin Theatre, 52nd Street and Broadway. *Matinee*—Orchestra, \$3.30; Balcony, \$2.20. *Evening*—Orchestra, \$5.50; Balcony, \$4.40.

*Rio Rita*—Ziegfeld Theatre, 54th Street and 6th Avenue. *Evening only*. Orchestra, \$5.50; Balcony, \$4.40.

#### Eye and Ear

*Arist and Models*—Winter Garden, Broadway near 50th St. *Evening only*. Orchestra, \$5.50; Balcony, \$3.30.

*Follies of 1927*—New Amsterdam Theatre, 42nd Street, West of Broadway. *Matinee*—Orchestra, \$3.85; Balcony, \$3.30. *Evening*—Orchestra, \$6.60; Balcony, \$4.40.



## Golden Anniversary

ON December 16th and 17th last the Engineers' Club of Philadelphia celebrated its golden anniversary in a notable manner.

Friday evening, Saturday afternoon, and Saturday evening were devoted to sessions, all in a mood much that of a happy family reunion at which those who had had wide experiences recounted them with confidence of complete understanding on the part of their sympathetic hearers.

The subject was Engineering Progress and World Civilization, the successive sessions being devoted to the Past—50 years ago; the Present; and the Future—50 years hence, and as may be expected one heard the work of engineers acclaimed a vital element in affairs.

The speakers were Willard T. Chevalier, Ambrose Swasey, Howard Elliott, Samuel Rea, Members of the Society; Frank P. Jewett, Charles M. Schwab and Dexter S. Kimball, from each of whom audiences have learned to expect some new and inspiring thought.

At a special convocation at the University of Pennsylvania on Saturday morning Honorary Degrees were conferred upon Mr. Elliott, Mr. Hammond, and Mr. Schwab.

By vote of the Board of Governors of the Club, Honorary Life Membership was bestowed upon Charles E. Billin, Member of the Society, who was one of the founders of the Club, 50 years ago, and is to-day its efficient and beloved Secretary.

## An Engineer Seminar in Germany

THE life and exploits of German students are recorded in song and story. The young American engineers under the auspices of the Freeman Fund are now a part of this historic educational system. Some of their experiences, however, will not appear in their official reports.

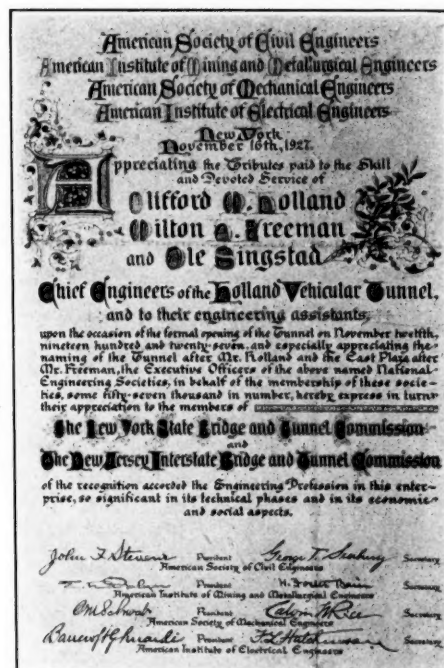
In a letter to an American friend, one of the Freeman Fund Students gives the following graphic account of some of their "extra-curriculum" activities:

"We had some real interesting parties fixed up for us here in Danzig by various German student organizations. Our last entertainment was a real German Beer Party in a 'Verbindung' (fraternity) house. The president of the organization sat at the head of a long and broad table around which sat the remainder of the

organization as well as some of the rest of us. Of course, everyone was accompanied by a tall-handled glass of beer at all times. Between drinking toasts and singing German songs which were accompanied by a small orchestra, the president showed his wares by calling order in Latin with a slap of his sword on the table and directing the ill sophisticated to drink a few extra 'steins' of beer. Toward the end of the meeting I was given the honor of taking over the chairmanship, so I ordered a few American songs between drinks, and came near breaking the lead sword. We all got home safe and sound that morning."

## In Appreciation of Engineering

THE official opening of the Holland Tunnel on November 12, marked the completion of a tremendous piece of work that was gratifying to all technical men, not only



Engrossed appreciation of recognition accorded engineers of Holland Tunnel

to civil and mechanical engineers who had been most directly connected with the work, but also to mining and electrical engineers who also had distinct interest in the project.

The phase of the gala opening that appealed most to the profession at large, was the recognition accorded by the Commission that had the work in charge. This is the joint body composed of the New York State Bridge and Tunnel Commission and the New Jersey Interstate Bridge and Tunnel Commission. These Commissions went out of their way in paying just respects to the engi-

neering ability that had made the tubes possible. The press also took a similar attitude, featuring not only the loss of Messrs. Holland and Freeman, but the general value and contribution of engineers.

Seldom does such Commission subordinate for the time being, the economic and social phases of its undertaking to the technical success. The occurrence caused wide spread comment in engineering circles. The Joint Conferences Committee, consisting of the Presidents and Secretaries of the Four Founder Societies, felt that it was fitting to present a resolution reflecting this attitude. Accordingly, the Conference Committee had a memorial engrossed and illumined, expressing its views.

This was presented on December 14, in the presence of representatives of the Four Founder Societies; Mr. Singstad, the Chief Engineer of the Tunnel; and Theodore Boettger and George R. Dyer, Chairmen, respectively, of the New Jersey and New York Commissions. The Society was represented by Willard T. Chevalier, M.Am.Soc.C.E., who presented the scroll with a graceful speech of acknowledgement. The half-tone of this memorial reproduced herewith, gives a fair, although inadequate, idea of its impressiveness.

## January Proceedings

AS to variety and importance of papers, the January number starts off the year 1928 quite auspiciously with seven contributions. The first describes "The Virginian Railway Electrification." George Gibbs, Member, details the planning and prosecution of this entire work, recently finished. Although intricate problems of engineering were involved, the resulting success and economies were most gratifying.

The "Analysis of Arch Dams by the Trial Load Method," as explained by C. H. Howell, Member, and the late A. C. Jaquith, is no simple matter. In reality such a dam acts as some combination of sets of cantilevers vertically and arches horizontally. The division of the total load into parts that result in equal deflections for both subdivisions is assumed to be the proper distribution.

In the next paper, M. D. Casler, Member, discusses "Stream Flow in General Terms." He considers irregular channels for which the cross-sections are not constant nor the slopes uniform. Included is a valu-

able set of curves for determining the constant in the weir formula.

Two papers on highway engineering were presented at the Asheville Meeting, "Foundations and Drainage of Highways," by Albert C. Rose, Associate Member, recounts important tests for standardizing sub-soils. It was found that shrinkage was the main factor, and a standard method for finding this was developed. In the second paper, Clifford Older, Member, treats the "Design and Construction of Concrete Pavements." Taking a formula for stress as derived by Professor Westergaard, Member, Mr. Older evaluates various terms and constants, giving curves for the practical application.

"The Role of the Civil Engineer in Power Development" may be problematic to some minds, but not to I. W. McConnell, Member. He demonstrates that the part is one of primary importance, popular opinion to the contrary notwithstanding.

"The Effect of Agricultural Drainage upon Flood Run-Off" is ably treated by S. H. Woodward and Floyd A. Nagler, Members. Taking concrete examples of rivers in Iowa prior and subsequent to drainage development, they conclude that the effect was negligible as regards either total flow or maximum discharge.

The January Proceedings concludes with 54 discussions on 24 papers previously printed, and 8 memoirs of deceased members.

## Make Up of Technical Divisions

A TABULATION as of December 2, 1927, gives the following information as to membership in the several Technical Divisions of the Society:

City Planning Division.....	1193
Construction Division.....	1461
Highway Division.....	1575
Irrigation Division.....	705
Power Division.....	516
Sanitary Engineering Division.....	1208
Structural Division.....	1730
Surveying & Mapping Division.....	405
Waterways Division.....	539

Total ..... 9332

The comparative sizes of the various Divisions may have little significance or they may give an idea of the relative strength of the subordinate fields of engineering. The enrollments make it clear that each of the various Divisions has a distinct value,

that it is offering a service that appeals to a large number of members.

This phase of Society work clearly has established itself as an important part of the organization. Even the younger Divisions have gathered to themselves a splendid clientele. The outlook for continued constructive work by the Technical Divisions is encouraging.

## The Noble Army Expands

AGAIN it has been the Secretary's pleasure to address letters to many members, advising them that hereafter they are exempt from paying dues in the Society. A list of 42 such fortunate—or better it might be said, deserving members—is given in Part I of Proceedings. These men have been chosen from two groups, as provided by the Constitution. Either they have paid dues continuously for 35 years as Corporate Members, or else they have attained the age of 70 years, with 25 or more years of payment to their credit.

Subdividing the 42 names on this Honor Roll, it is found that 31 belong in the 35-year class, as compared with 11 in the 25-year group. This in itself shows the substantial nature of the experience represented. Most of these members came into the Society as fairly young men, and their allegiance has been continuous.

Still more striking is the subdivision into 39 Members and 3 Associate Members. This illustrates a further notable quality, that of professional pride and ambition. Doubtless all have long since been fully eligible for the grade of Member, and almost all have grasped the honor.

The geographic distribution is of interest. Starting at the Eastern end of the country the list may be subdivided, with the representation of the various localities as follows: Northeastern United States, omitting the Resident District, 6; within 50 miles of New York city, 9; South Atlantic, 7; Middle West, 11; Southwest and Pacific Coast, 6; and Foreign, 3.

As might have been expected, the older members seemed to concentrate in the older sections of the United States.

The Honor Roll as it now stands represents a total of 417 names, an increase of 22 over last year, 19 having died during the interim.

## Opportunities For a Young Man in Civil Engineering

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ty of his subordinates. This can always be obtained by fair treatment.

Another endowment that a man must possess to become a really great engineer, is that of imagination. The layman generally visualizes the engineer as a man whose skull is packed with dry rules and figures and nothing much else. He may have the most elaborate set of plans and a specification to fit his proposed work, but unless he can see in his mind's eye, even before a stake is set, the completed whole, he cannot enter into the broader spirit of the undertaking, and need only expect mediocrity.

My faith is strong in the belief that in all branches of engineering, civil, mechanical, mining, and electrical, the necessity for doing vastly greater things than we have heretofore been called upon to do, will become more and more pressing. And so the opportunities will multiply and diversify. The success and failure of an individual rest largely with himself. The possibilities of development of the United States have not been exploited to any degree. As one of America's greatest financiers has said, "Any one who goes short on the United States goes broke."

It is often affirmed that the profession has become overcrowded. But in view of the advance of science the economic forces of nature, many of them now lying dormant, will be further unleashed and guided by the engineer for the benefit of the world and the happiness of mankind. I do not think there is an education which better fits one for the duties and responsibilities of life, whether he elects to follow a technical career or otherwise, than a basic knowledge of engineering.

I say to the young man who is determined upon engineering as a life work to remember that he is joining the ranks of one of the very oldest professions. The cave man who first threw a log across a stream was as much an engineer in principle as those of us who design and build our modern works. I say that the question of success lies largely in a man's own hands and in engineering as well as in other walks of life we get what we earn.—John F. Stevens.